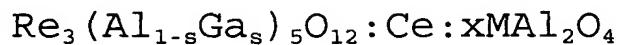


We Claim:

1. A garnet phosphor having the following composition:



wherein Re is a rare earth selected from the group of yttrium,

5       gadolinium, samarium, lutecium and ytterbium, s is equal to or greater than 0 and less than or equal to 1; x is from 0.01 to 0.3, and M is an alkali or alkaline earth metal.

2. A garnet phosphor according to claim 1 wherein Re is selected from the group consisting of yttrium and gadolinium.

10      3. A garnet phosphor according to claim 1 wherein x is from about 0.01 to about 1%.

4. A garnet phosphor according to claim 1 wherein M is selected from the group consisting of alkali and alkaline earth metals.

15      5. A garnet phosphor according to claim 4 wherein M is barium.

6. A method of making a phosphor slurry comprising making a solution of a polymer or polymerizable material in a dispersion liquid, cooling it, adding a YAG:Ce phosphor powder and shaking to form a uniform slurry.

20      7. A method according to claim 6 wherein the phosphor particles are from 1-15 microns in size.

8. A method according to claim 6 wherein the polymerizable material is polyvinyl alcohol.

9. A method according to claim 6 wherein the dispersion liquid is water.

5 10. A method according to claim 6 wherein the polymerizable material is heated to polymerize it.

11. A method according to claim 6 wherein the polymerizable material is polymerized with light.

10 12. A white light source comprising a blue-emitting LED coated with a layer of the phosphor of claim 1 embedded in a polymer.

13. A white light source comprising an ultraviolet light LED combined with red, green and blue emitting phosphors, wherein the green emitting phosphor has the formula of claim 1.

14. A method of making a white light source comprising

15 a) forming a slurry of a phosphor of claim 1 in a binder solution comprising a polymerizable material in a dispersion liquid in which the polymerizable material is soluble;

b) mounting one or more semiconductor light emitting diodes that emit blue light on a frame;

20 c) coating the light emitting diodes with a predetermined amount of the phosphor slurry; and

d) polymerizing the polymerizable material.

Docket No. SAR 14879

15. A method according to claim 14 wherein the polymerizable material is polyvinyl alcohol.

16. A method according to claim 14 wherein the polymerizable material is polymerized with heat.

5 17. A method according to claim 16 wherein the polyvinyl alcohol is polymerized by heating at about 130°C.

18. A method according to claim 14 wherein the polymerizable material is polymerized by photoinitiation.

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